

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims.

1. (Currently Amended) A method ~~(400) for processing location information, which is related to a certain mobile station in a cellular network, the method comprising: the step of:~~
~~a first network element, which is connected to the cellular network, receiving~~ causing, at least
in part, reception of a location information request at a first network element, which is
connected to the a cellular network, from a second network element, which is connected
to a packet data network, (401) a the location information request (201) relating to the a
mobile station associated with the cellular network; from a second network element,
which is connected to a packet data network,
causing, at least in part, transmission of a request to requesting (404) from a third network
element, which is connected to the packet data network, the request requesting a security
document relating to the second network element;
initiating the establishment (406) of at least one security association, which security
association that at least specifies at least data origin authentication and points from the
second network element to the first network element, wherein and which the
establishment at least involves use of information comprised in the security document;
authenticating, after successful establishment of said the at least one security association,
authenticating (408) the a data origin of the location service information request; and
initiating, if the data origin of the location service information request is authenticated
successfully, initiating (410) a location procedure relating to the mobile station in the
cellular network.

2. (Original) A method according to claim 1, wherein the security document relating to the second network element is a public key certificate, which comprises an identifier specifying the second network element and a public key of the second network element and which is cryptographically signed by the third network element.

3. (Currently Amended) A method according to claim 1, further comprising: ~~the step of:~~ requesting₂ from the third network element₂ a second security document relating to the first network element.

4. (Original) A method according to claim 3, wherein the security document comprises a first key, which is encrypted using a second key shared between the first network element and the third network element, and the second security document comprises the first key, which is encrypted using a third key shared between the second network element and the third network element.

5. (Currently Amended) A method according to claim 3, further comprising: ~~the step of:~~ initiating ~~the establishment of a second security association~~ that points from the first network element to the second network element using at least information comprised in the second security document.

6. (Original) A method according to claim 5, wherein the security association is a set of Internet Security Associations pointing from the second network element to the first network element and the second security association is a second set of Internet Security Associations pointing from the first network element to the second network element.

7. (Currently Amended) A method according to claim 5, wherein the second security association at least specifies ~~at least~~ data encryption.

8. (Original) A method according to claim 1, wherein the security association is a set of Internet Security Associations pointing from the second network element to the first network element.

9. (Currently Amended) A method according to claim 1, further comprising: ~~the steps of:~~

causing, at least in part, the said security document to be generated by a the third network element, which is connected to the packet data network; ~~producing (404) said security document;~~

initiating establishment of establishing (406) at least one other security association using at least information comprised in the security document, the at least one other security association at least specifying ~~which specifies at least~~ data origin authentication and ~~which points~~ pointing from the second network element to the first network element; ~~using at least information comprised in the security document, and~~

authenticating, after ~~the~~ successful establishment of ~~said~~ the at least one other security association, ~~authenticating (408) the~~ a data origin of the location service information request; ~~and~~

causing, at least in part, carrying out (701) a location procedure to be implemented, the location procedure relating to the mobile station ~~in the cellular network.~~

10. (Currently Amended) A method according to claim 9, further comprising: ~~the step of:~~

causing, at least in part, transmitting (707, 713) location information relating to the mobile station to be transmitted to the second network element.

11. (Currently Amended) A method according to claim 10, wherein the location information relating to the mobile station is caused, at least in part, to be transmitted to the second network element from the first network element.

12. (Currently Amended) A method according to claim 11, further comprising: ~~the steps of:~~

~~the third network element~~ causing, at least in part, producing a second security document relating to the first network element to be generated by at the third network element, the second security document relating to the first network element; and initiating establishment of establishing a second security association using at least the information specified in the second security document, the second security association at least specifying which specifies at least data encryption and points pointing from the first network element to the second network element, ~~using at least the information specified in the second security document.~~

13. (Currently Amended) A method according to claim 10, further comprising: ~~the step of:~~

initiating, before causing, at least in part, transmitting the location information to be transmitted to the second network element, establishment of establishing (708) a third security association, which at least specifies ~~at least~~ data origin authentication and points

from the second network element to a packet data device, wherein the packet data device
~~which~~ is either connected to the mobile station or is an integral part of the mobile station.

14. (Currently Amended) A method according to claim 10, wherein the location information relating to the mobile station is caused, at least in part, to be transmitted from a device, which is either connected to the mobile station or is an integral part of the mobile station.

15. (Currently Amended) A method according to claim 14, further comprising: ~~the step of:~~

initiating, before causing, at least in part, transmitting the location information to be transmitted to the second network element, establishment of ~~establishing (708)~~ a third security association, which at least specifies ~~at least~~ data origin authentication and points from the second network element to a packet data device, wherein the packet data device
~~which~~ is either connected to the mobile station or an integral part of the mobile station.

16. (Currently Amended) A method according to claim 15, further comprising: ~~the step of:~~

initiating, before causing, at least in part, transmission of the location information, establishment of ~~establishing (710)~~ a fourth security association, which at least specifies ~~at least~~ data encryption and which points to the second network element from ~~said the~~ packet data device.

17. (Currently Amended) A method according to claim 14, further comprising: ~~the steps of:~~

causing, at least in part, the mobile station receiving (702) to receive a notification relating to the location procedure ~~relating to~~ associated with the mobile station, ~~and~~ wherein the mobile station is configured to inform the informing (703) said packet data device about the notification.

18. (Original) A method according to claim 1, wherein the first network element is a network element of a GPRS network.

19. (Original) A method according to claim 18, wherein the first network element is a Gateway Mobile Location Center.

20. (Original) A method according to claim 1, wherein the first network element is a network element of a UMTS network.

21. (Currently Amended) ~~A network element (900) of a cellular network, the network element comprising~~ An apparatus comprising:

at least one processor; and

at least one memory including computer program code, the at least one memory and the computer program code being configured, with the at least one processor, to cause the apparatus at least to:

—~~means (910) for receiveing~~ receive, from a packet data network, a location information request relating to a ~~certain~~ mobile station,

—~~means (920) for initiateing~~ initiate a location procedure in ~~the~~ a cellular network,

- ~~means (930) for establishing~~ initiate establishment of security associations pointing to the ~~network element apparatus~~ from a network element of ~~the~~ a packet data network,
- ~~means (931) for performing~~ perform security functions as specified by the security associations on data ~~it receives~~ received from the packet data network,
- ~~means (932) which are arranged to~~ determine, if there is an existing security association pointing to the ~~network element apparatus~~ from a sender of ~~a~~ the location information request, and
- ~~means (933) for initiating~~ initiate security association establishments, which are configured ~~arranged~~ to establish ~~a~~ security associations if there does not exist a security associations do not exist, wherein the security association establishments point to ~~which~~ points towards the apparatus ~~network element~~ from the sender of ~~a~~ the location information request.

22. (Currently Amended) ~~A network element according to claim 21, further comprising~~
An apparatus according to claim 21, wherein the apparatus is at least further caused to:

- ~~means (940) for receiving~~ receive, from a device reachable via the cellular network, a request about a particular security association, which points to the ~~network element apparatus~~ from a certain network element of the packet data network;
- ~~means (932) for determining~~ determine whether ~~a requested~~ the particular security association exists; and
- ~~means (940) for transmitting~~ transmit information about the particular ~~requested~~ security association to the device.

23. (Currently Amended) ~~A network element according to claim 21, further comprising~~
An apparatus according to claim 21, wherein the apparatus is at least further caused to:

~~means (943) for receiving~~ receive a request to generate ~~produce~~ security documents relating
to the device and to the sender of a the location information request; and

~~means (944) for producing~~ causing, at least in part, a first security document associated with
~~produce~~ a first security document relating to the device and a second security document
associated with ~~relating to the sender of the location information request~~ to be generated.

24. (Currently Amended) ~~A network element according to claim 21,~~ An apparatus
according to claim 21, wherein ~~it~~ the apparatus is a network element of a GPRS network.

25. (Currently Amended) ~~A network element according to claim 24,~~ An apparatus
according to claim 24, wherein ~~it~~ the apparatus is a Gateway Mobile Location Center.

26. (Currently Amended) ~~A network element according to claim 21,~~ An apparatus
according to claim 21, wherein ~~it~~ the apparatus is a network element of a UMTS network.

27. (Currently Amended) ~~A packet data device being an integral part of a mobile station~~
~~or being attachable to a mobile station, comprising a processor, the processor being configured~~
~~to:~~ An apparatus comprising:

at least one processor; and

at least one memory including computer program code, the at least one memory and the
computer program code being configured, with the at least one processor, to cause the
apparatus at least to:

receive, ~~from a mobile station,~~ information ~~about~~ relating to a location information request and ~~about a sender of a~~ the location information request, ~~from a mobile station;~~ and exchange information about a security association with a network element connected to a cellular network ~~information about a security association,~~ the security association pointing which points to the network element from the sender of the location information request.

28. (Currently Amended) ~~A device according to~~ An apparatus according to claim 27, wherein the ~~processor is further configured to~~ apparatus is at least further caused to:

establish a second security association, which points to the ~~device~~ apparatus from the sender of the location information request and at least specifies ~~at least~~ data origin authentication.

29. (Currently Amended) ~~A device according to~~ An apparatus according to claim 28, wherein the apparatus is at least further caused to:

~~configured to~~ request a network element of the cellular network to generate ~~produce~~ security documents relating to the ~~device~~ apparatus and to the sender of the information request, wherein the security documents are utilized to establish ~~for the establishment of~~ the second security association.

30. (Currently Amended) ~~A device according to~~ An apparatus according to claim 27, wherein the apparatus is at least ~~processor is further caused to: configured to~~

transmit, to the mobile station, a permission to ~~send~~ transmit location information to the sender of the location information request,

wherein the permission is transmitted to the mobile station ~~which means are arranged to transmit the permission when there is said~~ if the security association is established.

31. (Currently Amended) ~~A device according to~~ An apparatus according to claim 27, further comprising a receiver of a positioning system.

32. (Currently Amended) ~~A device according to~~ An apparatus according to claim 31, wherein the receiver is a Global Positioning System receiver.

33. (Currently Amended) ~~A mobile station, comprising a processor, the processor being configured to:~~ An apparatus comprising:

at least one processor; and

at least one memory including computer program code, the at least one memory and the computer program code being configured, with the at least one processor, to cause the apparatus at least to:

receive, from a network element of a cellular network, a notification ~~from a cellular network~~ about ~~the~~ a location information request,

transmit a notification response ~~respond~~ to the network element of the cellular network ~~with a notification response~~, and

transmit a notification about the location information request to ~~notify~~ a packet data device, which is either an integral part of the ~~mobile station~~ apparatus or attached to the ~~mobile station~~ apparatus, ~~about the location information request.~~

34. (Currently Amended) ~~A mobile station according to~~ An apparatus according to claim 33, wherein the ~~processor is configured~~ apparatus is at least further caused to:
receive a permission from the packet data device; and
initiate, in response to receiving the permission, transmission of a response to the location
information request responding to a network element of the cellular network ~~by a~~
~~permission sent by the packet data device.~~